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PLATE I. [FROM A PHOTOGRAPH.]

SECTION OF CANCER OF ROOT OF THE TONGUE.

The anterior portions normal.

THREE CASES OF Total Excision of the Cancerous Tongue.

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A contribution to the casuistics of surgery of the tongue scarcely needs an apology. Considering the unsettled condition of surgical rules for the treatment of cancer of the tongue, every contribution is sure to be received with interest by the profession.

This article is intended to give my own experience in the total removal of the tongue and does not aim at giving an exhaustive treatise of the entire subject. For those desirous of studying these diseases, the book of Mr. Henry T. Butlin, F. R. C. S., published in convenient form, with some excellent illustrations, by Lea Brothers of Philadelphia, in 1886, is to be recommended. It is one of the best-written and most practical treatises on the subject ever published. The literature will be found very complete in this book, and since I can add nothing new, no attempt at giving a bibliography will be made here.

Before beginning the description of my cases, I merely desire to emphasize the point that they are cases of extirpation of both halves of the tongue, the operation usually called "total excision of the tongue." This operation is in no way to be compared with excisions of the tongue, which involve only the anterior two-thirds, leaving the root of the tongue intact. This latter operation is a simple matter, devoid of interest and is well understood by all surgeons. It can be performed through the mouth in a few minutes, by means of scissors and without any danger to the patient. The removal of the whole tongue, with its root, from the hyoid bone is a capital operation, and is always

fraught with great danger because these cases are usually accompanied by extensive manifestations of the disease, involving the removal of indurated glands, parts of the floor of the mouth, the arches of the palate, parts of the jawbone or even the epiglottis and parts of the pharynx.

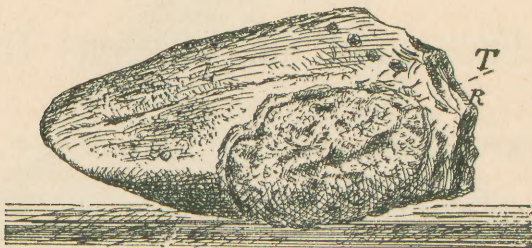


Fig. 1. L. Tongue; R. Root of Tongue; T. Tumor.

Specimen much shrunken by alcohol.

Case I. Mr. X—, from Washington Co., Ill., age 49, came to the Lutheran Hospital for operation. He had a tumor on the left side of his tongue (see Fig. 1) painful, and ulcerated, as is shown by the engraving. Externally the tumor appeared to be confined to the left side; but a careful digital examination traced it down in the direction of the root and across the median line into the right half of the organ. In the spring of 1883, with the assistance of Drs. Castelhun, Harnisch, Richter and others, I attempted to perform an operation similar to the one suggested by Nunneley, of Leeds, which is a modification of Chassaignac's original *écraseur* operation. The patient was chloroformed and placed on an ordinary table, his shoulders being slightly raised by a pillow. Two loops of thread were passed through the tip of the tongue, by means of which it was pulled through the open mouth. Next I passed a narrow-bladed knife from the neck, in the median line, through the root of the tongue. The point entered just above the hyoid bone, the cutting edge being turned forwards while the back of the blade rested against the hyoid bone. Under the guidance of the index finger of the left hand in the mouth, the blade was now made to pass into the pharynx, its back striking the back of the epiglottis. The tongue and all the tissues below it and the skin, were now split by the blade in the direction towards the chin about one half inch. The blade was withdrawn and the index finger passed through the incision

from below, so that its point could be seen on the back of the tongue. The chain of an *écraseur* was then passed through the incision and out of the mouth. After the glosso-epiglottic ligament on the right side was cut through with scissors, the chain was brought around the right half of the tongue and passed through the floor of the mouth into the first incision. Thus the right half of the tongue was completely surrounded by the *écraseur* at its very roots, the ends of the chain passing down and out just at the hyoid bone where they were drawn together by the screw constrictor. After the chain was fairly tightened and constriction begun it suddenly tore off. I next tried a loop of steel wire, which also broke, next this wire was doubled but it again gave way under the traction.

Under these circumstances, having the incision which admitted my finger from below and being able to pull the tongue well forward, I determined to try to excise the tongue with scissors, through the mouth. The right half of the tongue was cut off close to the hyoid bone and this act was followed by no loss of blood at all. The same manœuvre on the left side, however, was followed by a profuse hæmorrhage, which was checked by the application of two artery forceps; but, before these could be applied, considerable blood was aspirated into the trachea. When the hæmorrhage was checked the patient was pulseless and was not breathing. Dr. Castlehun said "He is dead." His lower extremities were now raised and his head lowered, while artificial respiration was tried with no success. He was replaced on the table and I made tracheotomy with a single incision; the two lips of the wound were drawn apart by Langenbeck's retractors, and, by placing my mouth down on the incision, I sucked two mouthfuls of coagulated blood out of the trachea and bronchi. The air rushed in and, by a few artificial respiratory movements of the chest, breathing began and the patient soon rallied. A tracheotomy tube was inserted, the ligature applied where the artery forceps had been left, a drainage tube was drawn through the submental incision, and the patient carried to his bed.

He was allowed no food or drink during the first twenty-four hours. After this time he was able to swallow liquids and made a splendid afebrile recovery. The tracheotomy tube was removed on the eighth day and the patient discharged on the twenty-first day. He was living and doing well six months after the operation. After that I lost track of him and am unable to give his subsequent history.

Case II. Mr. E. S., 52 years of age, from Belleville, Ill., coal miner, had a cancer near the root of the tongue which he said began to grow eight months before. An examination showed the tongue to be firmly fixed and a tumor about the size of a hen's egg projected under the chin and was firmly adherent to the inferior maxilla and also to the skin covering it. The patient thought that it had originated from an ulcer caused by a projecting carious tooth. The tumor extended exactly to the epiglottis in a backward direction. On the left side the glosso-pharyngeal arch was infiltrated and also the tonsil. The right side of the pharynx was normal, as was also the anterior third of the tongue. The case was one of the worst I have ever seen, and I deliberated for some time before I became convinced that its radical extirpation was possible.

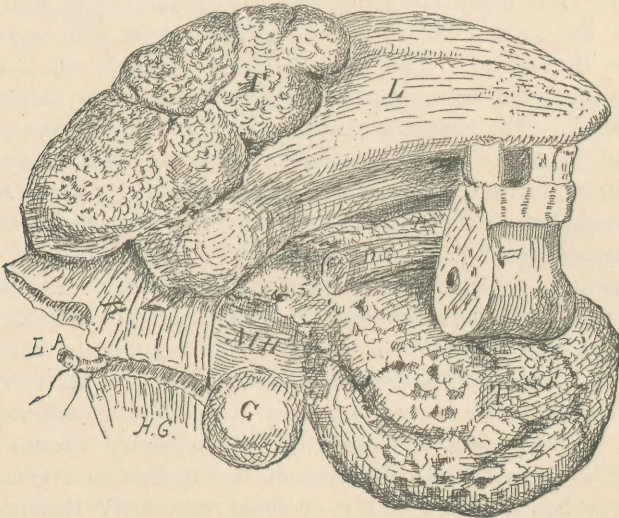


Fig. 2. L. Tongue; T. Tumor; D. G. Digastric; H. G. Hyoglossus; M. H. Mylohyoid; G. Gland; R. Root of Tongue; L. A. Lingual Artery.

On the fourth of April, 1884, at No. 915 Chouteau Ave., with the assistance of Drs. A. H. Ohmann-Dumesnil, A. F. Bock, C. Barek, Spiegelhalter, Thornton, Harnisch and others, the following operation was performed: The patient was given one-half grain of morphine hypodermically and chloroform was administered through the mouth. The lingual arteries were then ligated on both sides through small incisions parallel to and one-half inch above the lateral extremities of the hyoid bone.

Tracheotomy was next performed and Trendelenburg's tampon-canula in its original form was introduced and the chloroform administered through a funnel and rubber hose attached to it. An attempt to remove the large submental tumor from the jawbone proved that the bone itself had been invaded by the cancerous growth and its resection was necessary. Fig. 2 shows the exact amount of tissue removed. The jaw was cut through with a Jeffries saw, near the juncture of the ramus with the body, in

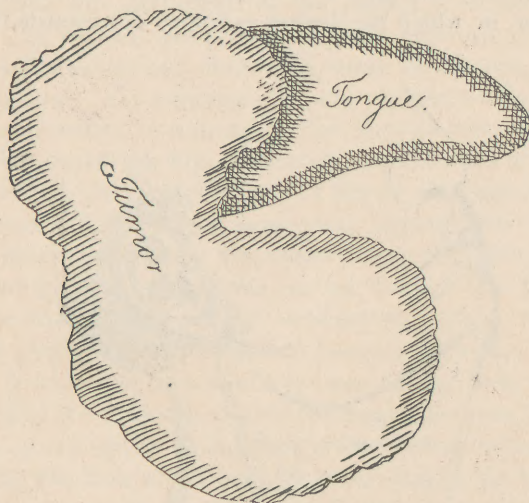


Fig. 3. Vertical Section through tumor and tongue shown in Fig. 2. (Diagrammatic).

front of the insertion of the masseter muscles on both sides, after two skin flaps had been reflected from an incision extending through the lower lip, over the chin, to the hyoid bone in the median line. Through this wound the middle portion of the jawbone with the submental tumor and the tongue containing the tumor was removed, after all the attachments had been separated by means of curved scissors. The removal of the infiltrated glossopharyngeal arch gave rise to hæmorrhage from the ascending pharyngeal artery, which required a ligature. The whole wound was washed with a three per cent carbolic acid solution, all the coagula removed from the pharynx and larynx down to the tampon canula and the whole surface dusted with iodoform. The tampon canula, was exchanged for an ordinary one and the wound accurately closed by sutures.

The patient rallied nicely, his pulse and temperature remained

normal for forty-eight hours. He was fed by means of the stomach tube. On the morning of the third day there was a decided catarrh of the trachea, and breathing became somewhat labored on account of the accumulation of tough mucus. Pulse 100, temperature 100°F. On April 7th the bronchial catarrh had extended lower down and continued to do so, in spite of treatment, the patient dying, in consequence of the process in his lungs, on the next day. Fig. 3 is a diagrammatic representation of the manner in which the disease extended downwards from the tongue.

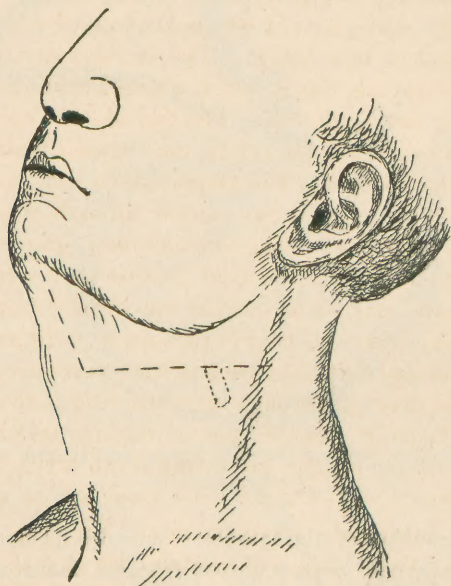


Fig. 4. Modification of Kocher's Incision.

Case III. Mr. L. E., age 66, for about one year had noticed a gradual increase in the size of his tongue, accompanied by a corresponding loss of mobility of the organ and great impediment of speech. During the two months previous to Sept. 22nd, 1887, his tongue had become ulcerated near its base, making any movement exceedingly painful. When he called on me he said that mastication and swallowing were so painful that he often went twelve hours without nourishment. An examination proved that the tumor involved the tongue only, and that it was confined entirely to the root of the organ, the anterior half being normal in structure. The hard mass rested close up against the epiglot-

tis. I determined to perform Kocher's operation, because the tumor was so large that its removal through the mouth by means of scissors was certainly impossible. The plate shows that the tumor involved the very root of the tongue and had to be dissected away from the hyoid bone and the epiglottis, to both of which it was closely adherent.

On Sept. 22nd, with the assistance of Drs. Ohmann-Dumesnil, A. F. Bock, G. W. Vogt, W. V. Kingsbury and Geo. W. Cale, the operation was performed at the patient's residence in St. Louis. The patient was placed into the chloroform-morphine narcosis and tracheotomy performed, using the tampon canula of Trendelenburg. The pharynx was next plugged with an antiseptic sponge attached to a string. The incision was made as is shown in the engraving Fig. 4, which is a modification of Kocher's incision, having one angle less. The flap of skin was turned up over the face and the lingual artery was ligated near its origin from the external carotid. The facial artery and vein were also ligated and then the incision was carried through into the mouth parallel to the jawbone. The submaxillary gland and some lymphatic glands were also removed because they were found indurated. Next the mucous membrane was divided from within the mouth around the right side near to the tongue, between it and the sublingual gland and extending back to the glossopharyngeal arch. The tongue was then slit through its entire length, the two halves being held by loops of silk cord passed through its anterior part. The right half of the tongue was drawn down through the submaxillary incision and easily cut loose from all its attachments at its base, by means of curved scissors. The large incision on the neck seemed to me sufficient to enable me to dispense with an external incision on the left side for the purpose of ligating the lingual artery. I thought that I could ligate it near to the hyoid bone, after cutting off the tongue, and this proved to be a correct and satisfactory procedure.

The whole wound was carefully irrigated with a weak (1:8000) solution of bichloride of mercury; a large drainage tube was drawn through the angle of the external incision and the skin wound united by numerous sutures. No iodoform or gauze was used within the mouth. I relied entirely upon very frequent gargling and washing out with a solution of permanganate of potash, for the purification of the internal wound.

An ordinary tracheotomy canula was left in the trachea for

forty-eight hours, after which time it was removed, the incision healing up spontaneously in about twelve days. The patient was nourished regularly by means of the œsophageal tube. The whole external incision united by first intention. The drainage tube worked admirably as an outlet for the profuse mucous secretion. The patient made an excellent recovery and was discharged on the twenty-second day.

In conclusion, I desire to state that in compiling statistics of operations for cancer of the tongue, total excisions requiring an external incision ought not to be compared or classified with partial resections per os. I have never lost a single patient when the latter operation was performed. Of all procedures for the total extirpation of the tongue, or even more extensive operations, Kocher's seems to me decidedly the most appropriate.

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DR. A. E. FOOTE

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